

# A NEW BASIC CHROMOSOME NUMBER IN THE GENUS *STELLARIA* (CARYOPHYLLACEAE)

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## ABSTRACT

Chromosome numbers are reported for two closely related species from the deciduous forest region of eastern North America, *Stellaria pubera* Michx. ( $2n = 30$ ) and *S. corei* Shinnery ( $2n = 60$ ). These counts represent a new basic chromosome number of 15 for the genus *Stellaria*.

Key Words: *Stellaria*, basic chromosome number, North America

## INTRODUCTION

*Stellaria* is a large, very variable and cosmopolitan genus of the Caryophyllaceae with about 120 species. Its main centers of diversity are in the temperate and sub-temperate regions of Europe, Asia and North America, but representative species occur in the montane floras of the tropics. Basic chromosome numbers of  $x = 10, 11, 12$  and  $13$  have been reported for the genus, but almost all the native North American species that have been examined have a base number of  $13$  (Federov, 1969; Moore, 1973; Goldblatt, 1981). As part of a survey of chromosome numbers in the North American Caryophyllaceae, *Stellaria pubera* and *S. corei* were examined. Their respective chromosome numbers of  $2n = 30$  and  $60$  are here reported for the first time and provide a new basic chromosome number of  $15$  in the genus *Stellaria*.

## MATERIALS AND METHODS

Rooted material was transplanted into the greenhouse and grown in clay pots in a sterile potting-soil mixture. Root-tips were removed from actively growing plants, pre-treated for about two hours in a saturated aqueous solution of paradichlorobenzene, fixed in 1:3 acetic acid:ethanol, hydrolyzed for 15 mins. at  $60^{\circ}\text{C}$ . in N-hydrochloric acid, rinsed in water and squashed in aceto-carmine. A few drops of ferric chloride solution were added to the rinse water before squashing, to intensify staining. Also, flower-buds were fixed in the field in Carnoy's solution and the pollen mother cells subsequently squashed in aceto-carmine. The plant

Table 1. Source of materials of *Stellaria*

		<i>n</i>	<i>2n</i>
<i>S. pubera</i>			
Morton NA4435	Asheville, N.C.	–	30
Morton NA4460	Cheoah Reservoir, Fontana, N.C.	–	30
Morton NA5710	Cherokee, N.C.	15	–
Morton & Venn NA15014	Whitley to Honeybee, McCreary Co., Ky.	–	30
<i>S. corei</i>			
Morton NA4444	Gatlinburg, TN	–	60
Morton NA5705	Cherokee, N.C.	–	60
Morton & Venn NA14969	Linville, Avery Co., N.C.	–	60

materials used in this study are listed in Table 1. Voucher specimens have been deposited in the following herbaria: WAT and JKM, with incomplete sets in CAN and MICH.

#### RESULTS

Four populations of *Stellaria pubera* were examined, three using root-tips and one using flower-buds. They had chromosome numbers of  $2n = 30$  and  $n = 15$  respectively. Pollen mother cells showed a regular configuration of 15 bivalent chromosomes at diakinesis. Three populations of the much rarer *S. corei* each had  $2n = 60$  chromosomes in root-tip preparations.

#### DISCUSSION

*Stellaria pubera* and *S. corei* are part of the endemic flora of the Carolinian region in the deciduous forest zone of eastern North America. This is an ancient flora and characterizes the mixed deciduous mesophytic forests which have had a continuous existence in this part of North America since the mid-Tertiary era (Graham 1972). These two species are closely related and morphologically very similar. *S. corei* appears to be a polyploid derivative of the diploid *S. pubera*. Classification within the genus usually follows that proposed by Fenzl in Endlicher (1840). Under this system *S. pubera* and *S. corei* belong to Section *Eu-Stellaria*, along with most of the familiar North American and European species. The division of this section into subsections is based on leaf characters and

appears to be unsatisfactory. Neither of the species under consideration fits clearly into any of the five subsections.

#### LITERATURE CITED

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